

**EFFICIENT HARD DISK DRIVE ENERGY RECOVERY
CIRCUIT AND METHOD AND A HARD DISK DRIVE
INCORPORATING THE SAME**

ABSTRACT OF THE DISCLOSURE

A hard disk drive energy recovery circuit, a method of recovering energy from a motor of a hard disk drive and a hard disk drive. In one embodiment, the hard disk drive energy recovery circuit includes (1) a spindle resolver that generates transition signals as a spindle motor of the hard disk drive rotates among angular regions, (2) a spindle region state machine, coupled to the spindle resolver, that receives the transition signals and generates rectifier drive signals based thereon and (3) a synchronous rectifier, coupled to the spindle region state machine, that employs the rectifier drive signals to recover electrical energy from the motor.